

F. Market Perception of ITV Companies

Are ITV companies friends or foes of the rest of the media market? Survey respondents were asked to check yes/no boxes as to whether they regarded each company as an opportunity or as a competitor. Many are regarded as business opportunities and few are viewed as competitors. Company totals that do not equal 100% mean that a percentage of the 60 respondents did not check off a box for that company.

Market Perception of ITV Services

	Consider Company/ Product An Opportunity?		Consider Company/ Product A Competitor?	
	Yes	No	Yes	No
ACTV	45%	6.7%	8.3%	18.3%
AOL TV	50%	5.0%	18.3%	18.3%
Digital Convergence.Com	5%	--	1.7%	6.7%
Diva	21.7%	6.7%	5.0%	10.0%
ICTV	31.7%	--	3.3%	11.7%
Interactive Channel	10.0%	6.7%	1.7%	8.3%
Intertainer	30.0%	3.3%	5.0%	15.0%
Liberate	25.0%	5.0%	8.3%	11.7%
OpenTV	23.3%	3.3%	5.0%	16.7%
Peach networks	6.7%	3.3%	6.7%	--
PowerTV	6.7%	3.3%	3.3%	1.7%
Prasara	3.3%	1.7%	--	5.0%
RealNetworks	46.7%	3.3%	11.7%	23.3%
Replay	36.7%	10.0%	11.7%	23.3%
TiVo	35.0%	15.0%	13.3%	23.3%
TV Guide Interactive	43.3%	10.0%	6.7%	25.0%
WebTV	53.3%	13.3%	20.0%	23.3%
Wink	46.7%	5.0%	10.0%	21.7%
Worldgate	43.3%	3.3%	8.3%	16.7%

Source: Myers Group, *Prospects for ITV, 2000*

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A. Introduction

"You gotta receive to believe." That's becoming a rallying cry among those hawking new digital TV services. If consumers can receive these new wonders, ITV developers say, they'll believe how great they are.

Enabling consumers to receive ITV services is dependent on the growth of many distribution vehicles. Fortunately for ITV applications providers, distribution options have increased through expanded capabilities of cable, broadcasting, satellite, personal computers, the internet, telecommunications and consumer electronics. Unfortunately, distributors in each of those fields currently are not providing broad enough distribution of any ITV services to guarantee their success.

Interactive television is being revived by a host of developments in digital technology, all of which are contributing to its rollout. The pace of ITV deployment is being dictated largely by these technologies:

- Broadband fiber cable plant
- Advanced digital cable set-top boxes
- Computer storage and processing
- Advanced telecommunications networks
- Digital broadcast spectrum utilization
- Content applications platforms
- User interfaces and navigation tools
- Digital video production
- Digital TV sets and advanced consumer electronics
- Direct-broadcast satellite capabilities
- High-speed internet access
- Video and audio streaming
- Wireless technologies

Many of the previous technological impediments to scalable ITV deployment have largely disappeared. Today, ITV developers and distributors can take advantage of:

- Improved microprocessor capabilities
- Increased technical standards
- Lower costs per stream
- Proven network architectures
- Higher transmission speeds
- Economical set-top boxes
- Wider hybrid fiber-coax deployment
- Interoperable software platforms
- Conventional user interfaces and navigation tools
- Convergence of computer and TV devices
- Lower cost digital production equipment and techniques
- Federally authorized spectrum usage

Digital technology itself is breaking down the barriers between devices and fostering media convergence. By converting content into streams of zeros and ones, "digitization destroys compartmentalization," says Bob Pepper, chief of the Federal Communications Commission's Office of Plans and Policy. During a presentation at the Myers ITV Forum in February, he explained how in the digitized world "a bit is a bit," and bits are not constrained by a distribution medium:

- A bit does not know if it's broadcast, cable TV, telephony or computer networking
- Bits can be transmitted over twisted pairs, coax cable, satellite, radio, power lines or fiber
- Bits can be readily stored
- Bits can be processed anywhere
- Customer devices can readily manipulate bits
- Intelligence can be inserted everywhere-in the network and at the edges

To examine how the ITV rollout will progress, The Myers Group and eMarketer compiled the following market data on the key technologies involved.

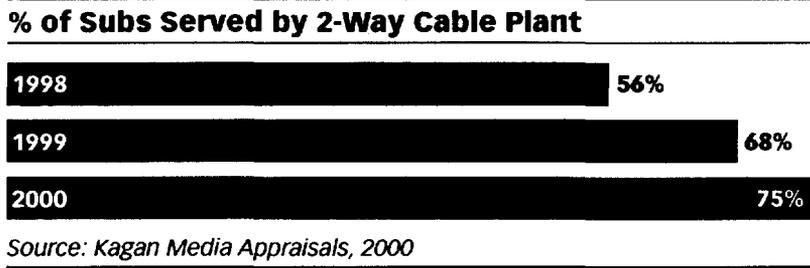
B. Digital Cable

Broadband cable represents the best delivery platform for ITV services. Respondents to Myers' Prospects for ITV Survey acknowledged cable operators as the greatest potential beneficiaries of ITV.

Over the past couple years, cable's multiple system operators (MSOs) have committed to major plant upgrades in order to provide broadband two-way capability. But some MSOs that have engaged in substantial acquisition activity, including AT&T BIS and Charter Communications, have found themselves with a large amount of plant that is out-dated or inferior. As a result, some systems have moved slowly toward delivering new digital services, especially high-speed internet access, until they are certain they can provide consumers with high reliability.

Kagan Media Appraisals, in a report for the National Cable Television Association, predicts that two-way cable plant will reach nearly 51 million U.S. cable subscribers by the end of 2000. However, that does not mean that all those subscribers will be accessing two-way services, since they require appropriate consumer premises equipment (e.g., digital set-tops, cable modems) and operators must offer the requisite services.

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Cable's capacity for delivering ITV services is greatest with plant operating at 750 MHz or above. According to Kagan, nearly three-quarters of US cable plant will run at 750 MHz by year's end.

US Cable Bandwidth by % Capacity Increase

Bandwidth	Equivalent Channel Capacity	1998	1999	2000
% < 550 MHz	< 82 Channels	28%	13%	8%
% 550 Mhz	82 Channels	22%	17%	10%
% 750 Mhz	115 Channels	48%	65%	72%
% > 750 MHz	135 Channels	2%	5%	10%

Source: Kagan Media Appraisals, 2000

While continued growth in the cable market may be slower than desired, many of the larger cable providers are upgrading their systems at a very rapid rate. By the end of 2000, for example, six top cable providers in North America will have 70% of their service areas two-way cable ready, with some companies reaching 95% penetration, according to analysis by Goldman Sachs. Almost all systems run by these providers will be operating at 550 MHzs or higher by the end of 2000. This chart does not include the US's two largest MSOs, AT&T BIS and Time Warner Cable, both of which have engaged in extensive upgrade projects.

Cable Plant Status, % of Service Area with Two-Way Capability, 1997-2000

Service Provider		1997	1998	1999	2000
Cablevision	Two-Way	31.0%	45.0%	60.0%	70.0%
	550 MHzs +	78.0%	84.0%	90.0%	90.0%
Comcast	Two-Way	12.3%	50.0%	65.0%	70.0%
	550 MHzs +	65.0%	80.0%	90.0%	95.0%
Cox	Two-Way	30.0%	50.0%	67.0%	76.0%
	550 MHzs +	68.0%	79.0%	86.0%	96.0%
MediaOne	Two-Way	30.0%	60.0%	70.0%	80.0%
	550 MHzs +	55.0%	75.0%	95.0%	95.0%
Videotron (Canada)	Two-Way	13.9%	30.0%	47.7%	74.7%
	550 MHzs +	77.0%	77.0%	77.0%	77.0%
Rogers (Canada)	Two-Way	52.0%	75.0%	90.0%	95.0%
	550 MHzs +	70.0%	85.0%	95.0%	97.0%

Source: Goldman Sachs, 1999

Increased capacity can translate into more channels or additional services. The following shows the amount of subscribers that will have high channel capacity available to them. The actual number of channels that a cable system carries depends on its network carriage agreements and certain regulatory requirements.

Currently, most cable operators are continuing to provide analog cable service while adding a layer of digital services. The amount of digital cable that is made available is a critical factor in the carriage of new digital networks and ITV services.

US Cable Bandwidth by Subscriber Count (Millions)

Avg. Upgraded Subscribers	Equivalent Channel Capacity	1998	1999	2000
% < 550 MHz	< 82 Channels	18.30	8.67	5.43
% 550 Mhz	82 Channels	14.40	11.30	6.67
% 750 Mhz	115 Channels	31.40	43.40	48.00
% > 750 MHz	135 Channels	1.31	3.34	6.67
Total		65.41	66.71	66.77

Source: Kagan Media Appraisals, 2000

Fueling cable's upgrades are lower costs for key components. Digital set-tops prices have fallen into the long-awaited \$300 range, even lower priced in volume, while costs-per-stream, a key measure for video-on-demand, are said to be in the range of \$700-800.

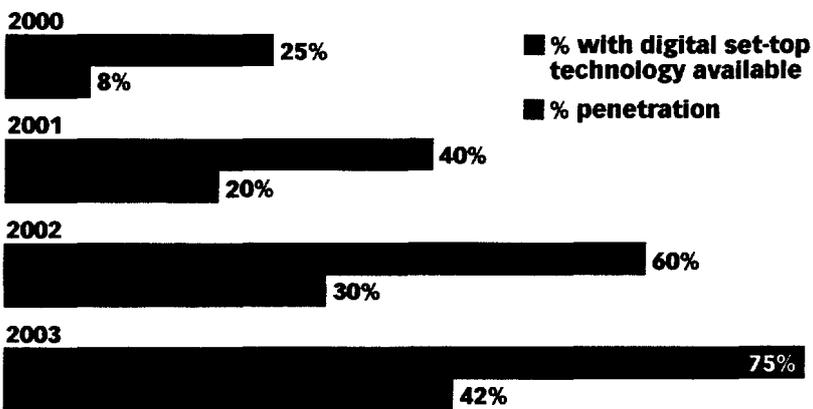
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The major manufacturers of digital set-tops have geared up digital set-top production. Motorola Broadband Communications (formerly General Instrument), provides set-tops through its DCT product line, including the DCT-5000 advanced digital set-top. Scientific-Atlanta, with its Explorer 2000 advanced set-top, Pioneer New Media and Zenith Electronics are other major US manufacturers. Sony entered the field through an agreement to provide set-tops for Cablevision Systems. UK-based Pace Micro Technology and Dutch-based Philips Consumer Electronics are also players in the US set-top market.

Despite these advancements, at this writing the industry continues to wrestle over technical standards to create interoperability with digital TV sets and to spur development of uniform, open digital set-top platforms, an effort that is being guided by CableLab's OpenCable project. In addition, set-top manufacturers have struggled with software integration and other issues that have interrupted production and in some cases caused set-top recalls.

The Myers Group, based upon operator survey research released in spring, 1999, projected that 42% of US cable households will have digital set-tops by the end of 2003. Myers is conducting further research on digital cable and will soon issue additional findings.

Digital Set-top Projections, 2000-2003



Source: The Myers Group, 1999

While cable operators are increasing their installation of broadband plant, there is some question over how well cable will be able to exploit its window of opportunity. Two or three years ago, conventional wisdom at cable trade conventions was that the industry had about a two-to three-year lead on competitors in providing digital content and broadband services.

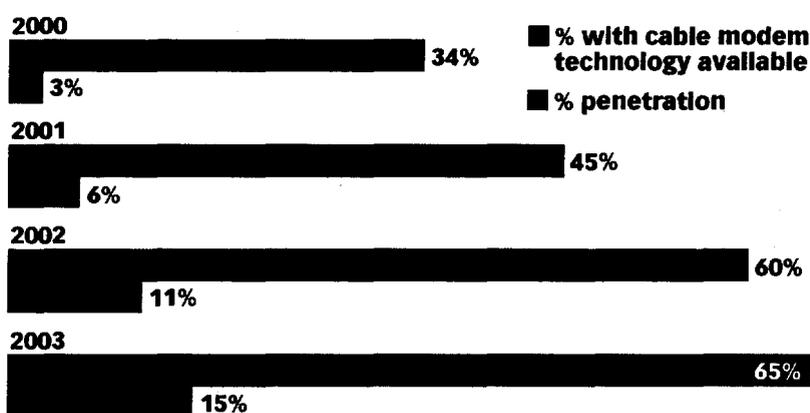
Now that window is closing, partly due to technological advancements by competitors and partly due to the dynamics of marketing. New services are being readied for market by all manner of service providers. Even if cable has the best distribution system, operators will find themselves vying with an increasing number of digital service providers for consumers' time and money.

C. High-speed Internet Access

Broadband cable also gives operators the ability to provide high-speed internet access. Currently operators, with a few exceptions, are using cable modems to provide high-speed access to PCs, not TVs. In the near future, advanced digital set-tops for cable TV will provide both digital video and internet access capabilities, which could speed the rollout of internet over TV services and related offerings.

So far the rollout of cable modems is proceeding slowly. Cable operators surveyed by Myers do not foresee vast percentages of their subscribers using cable modems in the next couple of years. A primary reason, operators say, is that cable-fed internet service adds another \$40 or so to a subscriber's monthly bill. Based on Myers operator surveys, here are projections of cable modem growth.

Cable Modem Projections, 2000-2003



Source: The Myers Group, 1999

The obvious advantage of broadband access is speed; but speed comes at a price. While a traditional analog modem may be cheaper than other forms of high-speed data transmission, as a ratio of dollars to rate of transmission, analog modems are by far the least efficient means of access. As the following chart demonstrates, analog modems function at a bits to buck ratio of only 1.4x. This figure is dwarfed when compared to that of cable modems, which boasts a bits to buck ratio of 75x.

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Customer Costs of Various Access Technologies

Technology	Down-stream Speed (Kbps)	Cost of Installation	Cost of Consumer Premises Equipment	Monthly Basic Service Fee	Monthly Internet Service Fee	Total 1st Year Cost to Consumer	Bits Per Buck Ratio*
Analog Modem	56.6	\$-	\$200	\$20	\$20	\$680.00	1.4x
ISDN	128.8	\$90-160	\$300	\$30-50	\$30-50	\$1,385.00	1.6x
Satellite	400	\$50	\$300	\$30-50	\$-	\$830.00	10.0x
ADSL	1500-8000	\$100	\$200	\$50-60	\$-	\$830.00	27.3x
Cable Modem	1200-27000	\$5-150	\$250**	\$40	\$-	\$593.00	75.0x

*Ratio of downstream data rate/monthly basic service fee. **Rental of equip. included in service fee. Source: US FCC, 1999

While its transmission speed and relative cheap price are impressive, cable modems are limited by the capabilities of the cable access providers. In order for ITV to become a reality, cable infrastructure must be able to support two-way data traffic, both downstream data from the access provider to the individual user, and upstream data from the individual user back to the provider. In addition to being two-way data enabled, cable systems must be able to support data flow at a speed of at least 550 MHz.

Until recently, most cable providers could not provide such technologies, thereby stunting the growth of internet over TV throughout the United States. According to Goldman Sachs, in 1998, only 20% of all American cable passed households were cable modem ready. Although a major push to upgrade systems increased cable modem ready households to 50% in 1999, Goldman predicts it will be 2002 before penetration reaches 70% of American cable passed households.

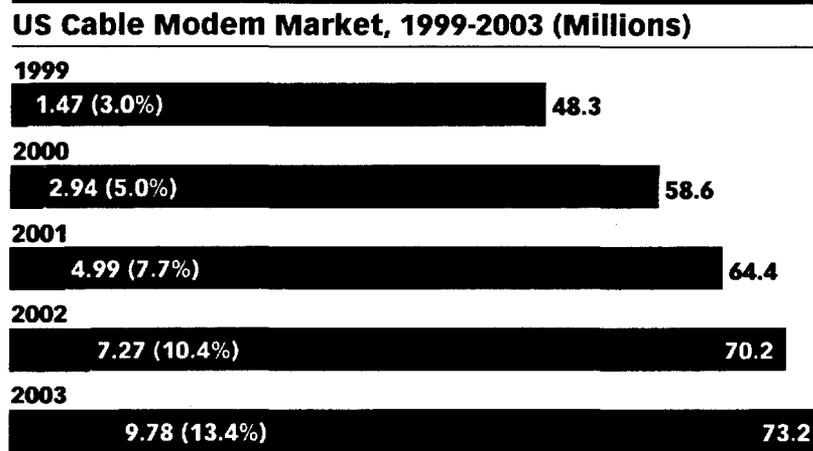
Cable Modem Ready Households as a % of Cable Passed Houses, 1998-2003 (Millions)

	Households passed by cable	% homes -passed modem ready	# of homes modem ready
1998	95.2	20%	19.0
1999	96.5	50%	48.3
2000	97.7	60%	58.6
2001	99.0	65%	64.4
2002	100.3	70%	70.2
2003	101.6	72%	73.2

Source: Goldman Sachs, 1999

Morgan Stanley Dean Witter projects a much slower rollout of cable modem services across the United States. MSDW projects that only about 45% of US homes will be passed by 2001, and a mere 51% by 2004.

According to eMarketer, at the end of 1999, there were only 1.47 million cable modem users in the United States. While significant user growth will take place over the next several years, actual cable modem subscribers will represent a very small percentage of houses actually equipped for the service. By 2003, there will only be 9.78 million cable modem subscribers versus the 73.2 million cable modem ready (using Goldman Sachs figure) homes, or a mere 13.4%.



■ Cable Modem Subscribers ■ Cable Modem Ready Houses

Source: eMarketer, 2000 (subscribers); Goldman Sachs, 1999 (Cable Ready Houses)

Comparative Estimates: US Cable Modem Market, 1998-2003 (Millions)

	1998	1999	2000	2001	2002	2003
Goldman Sachs	0.60	1.50	4.00	8.00	12.50	17.00
Kinetic Strategies		1.50				
Morgan Stanley	0.40	1.10	2.50	4.60	7.10	10.00
Paul Kagan	0.50				7.30	
Pioneer Consulting		0.79	1.93	3.09	4.63	6.16
US Bancorp Piper Jaffray		1.80	3.10	5.90	8.50	
Veronis, Suhler & Associates		1.20	2.20	3.50	5.00	6.80
eMarketer	0.55	1.47	2.94	4.99	7.27	9.78

Source: eMarketer, 2000; various as noted

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Even as more households become cable modem ready, this in and of itself will become a problem for service providers. Cable bandwidth is shared among a number of households, unlike other forms of bandwidth, which are dedicated. As more and more people start to use cable modem technology, the amount of bandwidth used will be split among more users, resulting in significantly slower speeds, resulting in poorer transmission in data.

Meanwhile, telephone companies are providing high-speed access through digital subscriber lines (DSL), but the rollout is going equally slow. DSL growth is being stymied by the telecommunication industry's ongoing struggle between copper and fiber optic lines. While DSL is designed to create a high-speed internet connection through a copper line, it cannot run through fiber. As many Bell operating centers are upgrading their systems to fiber, the option of offering DSL services has been eliminated. Companies, such as SBC, BellSouth, and Alcatel, are manufacturing adapters, which allow DSL and fiber to interconnect. While promising, these adapters are still in field trials and have yet to reach the consumer market.

In addition to the fiber/cable quandary, DSL has other quirks which limit its availability to the general public. DSL signals can only travel a distance of about 15,000 feet without degradation. As such, people have to live within a 15,000 foot radius of a Bell central office, where DSL signals originate to be eligible for the service. In addition to distance issues, DSL service may be affected by the thickness of the wire that it is being transmitted through. Thin wires do not handle DSL very well. As such, one can easily understand the limited acceptance of such services, as DSL has gained only 500,000 subscribers at the year-end 1999.

US DSL Market, 1998-2003 (Millions)

	DSL Subscribers	# of Households DSL Capable	% Total
1998	0.08	10.17	0.79%
1999	0.54	15.41	3.50%
2000	1.84	31.12	5.91%
2001	4.08	52.38	7.79%
2002	6.62	79.36	8.34%
2003	10.95	85.50	12.81%

Source: eMarketer, 2000 (Subscribers); Goldman Sachs, 1999 (DSL Households)

Comparative Estimates: US DSL Market, 1998-2003 (Millic

	1998	1999	2000	2001	2002	2003
Cahner's In-Stat		0.40				12.00
Goldman Sachs	0.05	0.50	1.50	3.00	4.50	7.00
IDC		0.53				
Morgan Stanley	0.06	0.74	2.56	5.47	8.39	11.84
Pioneer Consulting		0.76	2.37	5.48	9.04	12.46
Telechoice		0.58	2.11	5.10	7.66	9.57
US Bancorp Piper Jaffray		0.44	1.68	4.19	7.69	
Veronis, Suhler & Associates		0.20	0.60	1.00	1.50	3.50
Yankee Group				2.00		6.00
eMarketer	0.08	0.54	1.84	4.08	6.62	10.95

Source: eMarketer, 2000; various as noted

Telephone companies jumped into the ITV fray in the mid-90s but then withdrew in favor of broader telecommunications offerings, internet strategies, and merger and acquisition activity. Recently U S West has been touting a DSL-based "full service" in Phoenix that delivers high-speed access, several digital video channels and additional voice services. U S West accomplishes this by installing fiber nodes very close (about 1,000 feet) to users. SBC reportedly has similar plans.

D. Digital Broadcasting

By virtue of being granted digital spectrum by the federal government, broadcasters have an extraordinary digital distribution stream in their possession. In the past several months, plans have surfaced to aggregate stations' spectrum for digital services, most of which currently focus on delivery of PC-oriented internet services but by extension could serve the TV as well.

As of 1 May 2000, there were 126 stations broadcasting in digital in 49 markets, comprising 62.74% of the United States, according to the National Association of Broadcasters. But the service has caused headaches for many stations. While broadcasters have been spending money to retrofit their stations, only 200,000-plus digital TV sets have sold. Digital broadcasting therefore has been stuck in a classic chicken-or-egg dilemma with neither distributor nor product able to drive the service.

Adding to this dilemma are repeated arguments that the digital broadcasting technical standards are inferior and must be changed. All of this is occurring under the watchful eye of government regulators, some whom have grown weary that the spectrum allocation is not being used for its original intention: high-definition television. The latest line from Washington, however, is that key regulators are okay with the so-called "digicasting" plans.

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If the new digital broadcast services are able to generate consumer interest, they can help fuel the mix of available digital products and offerings. Additionally, they can provide new options for advertisers. Here is how Next Century Media foresees the future environment for advertisers.

Future Environment for Advertisers, 2000-2005						
	2000	2001	2002	2003	2004	2005
Total US HHS	99,851	100,710	101,576	102,449	103,330	104,198
Digital Satellite HHS	8,000	9,000	10,000	11,000	12,000	13,000
% of Satellite HHS	8.0%	8.9%	9.8%	10.7%	11.6%	12.5%
Digital Cable HHS	8,300	14,300	20,300	26,300	32,300	38,300
% of Cable HHS	8.3%	14.2%	20.0%	25.7%	31.3%	36.8%
Digital Broadcast HHS	300	1,000	3,000	6,000	12,000	18,000
% of Broadcast HHS	0.3%	1.0%	3.0%	5.9%	11.6%	17.3%
Avg. HDTV Set \$	\$1,200	\$500	\$450	\$400	\$350	\$300
HDTV Prog./Week	70	150	250	500	750	1,000
HDTV HHS	270	900	2,700	5,400	10,800	16,200
% of HDTV HHS	0.3%	0.9%	2.7%	5.3%	10.5%	15.5%
Internet TV HHS	6,950	11,750	17,050	23,100	30,400	37,700
% of Internet TV HHS	7.0%	11.7%	16.8%	22.5%	29.4%	36.2%
Total Digital HHS	14,375	20,225	26,725	33,725	42,225	50,725
% of Total Digital	14.4%	20.1%	26.3%	32.9%	40.9%	48.7%

Households in thousands. Source: Next Century Media, from Cablevision Blue Book, 12/99

E. Consumer Electronics

Following the explosion in personal computers, digital technologies are spurring new consumer electronics devices that are providing interactive TV functionality.

The device that's gotten the most attention recently is the personal video recorder, from providers TiVo and Replay. DFC Intelligence forecasts that revenue from personal video recording will generate \$1.1 billion by 2005.

The rollout of digital set-tops could be increased if consumer electronics manufacturers, computer manufacturers and retail outlets decide to step up the sale of such devices at retail. Retail set-tops, which are being largely forestalled while technical standards and regulatory issues are cleared up, could provide a combination of digital cable, high-speed internet access and interactive features. Digital TV sets also could have such enhancements built in.

Sales of standard-definition digital TVs and high-definition sets have been moving at a snail's pace due to high-prices and lack of public buzz over digital broadcasting. The Consumer Electronics Association contends sales have picked up; at the end of April, it said total factory-to-dealer sales of DTV sets stood at 202,586 and that March sales of 24,332 sets marked an increase of 7% over February. Provided that industry players can work out differences over standards, digital and HD sales are expected to grow substantially.

Advanced TV Set Market, 1999-2003, (Millions)					
	1999	2000	2001	2002	2003
SDTV/HDTV Capable Set-Top Box Households	-	-	0.1	0.5	1.1
SDTV/HDTV Capable Set-Top Box Units Sold	-	-	0.1	0.3	0.7
Standard-Definition TV Households	0.1	0.2	0.7	1.8	4.0
Standard-Definition TV Units Sold	0.1	0.2	0.4	1.1	2.2
High-Definition TV Households	0.1	0.2	0.3	0.7	1.1
High-Definition TV Units Sold	0.1	0.1	0.2	0.3	0.4
Total (Converters & TV's) households	0.2	0.4	1.1	3.0	6.2
Total (Converters & TV's) Units Sold	0.2	0.3	0.7	1.7	3.3

Source: Forrester Research, 1999; from Cablevision Blue Book

Convergence is blurring the lines between in-home devices and creating new multimedia options. IDC, an information technology market researcher, foresees a market of "Net TV" devices, including set-top boxes, enhanced TVs and cable boxes, that will reach a worldwide installed base totaling 81.2 million by 2004. Other "Net-appliance" devices set to explode, according to IDC, are game devices like PlayStation 2, to reach a predicted install base of 85.7 million worldwide in 2004, and "Net-smart handheld," to hit 67.4 million in that timeframe.

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Worldwide Information Appliance Shipments (Millions)

Type of Device	1999	2004	CAGR 1999-2004
Net TVs	6.10	17.80	23.8%
Net Screenphones	1.10	3.60	26.8%
Net Gaming Devices	2.00	22.60	62.4%
eMail Terminals	0.10	4.60	115.1%
Web Terminals	0.01	6.50	304.5%
Net Smart Handhelds*	1.70	33.20	81.2%
Other	0.01	0.69	133.2%
Total Appliances	11.02	88.99	51.9%

*Includes Smart Phones. Source: IDC, 2000

The market for home entertainment devices, including TV set-top boxes, handheld computers and gaming consoles is growing dramatically. This market will grow from 11 million units shipped in 1999 to 89 million units in 2004, according to IDC. This increase in shipments will result in an increase in revenues from \$2.4 billion in 1999, to \$17.8 billion in 2004, or a compound annual growth rate (CAGR) of 49.3%.

Sales of Home Entertainment Devices, 1999-2004 (Millions)

Units	
1999	11
2004	89
Revenues	
1999	\$2.4
2004	\$17.8

Source: IDC, 1999

F. Satellite Services

As noted earlier, direct-broadcast satellite providers DirecTV and EchoStar are moving to provide various ITV and internet-access options. If cable or others lag, it's possible that satellite services may ultimately become ITV's savior in the years to come. Developers who favor ITV services over cable counter that the laws of physics will limit the satellite service's two-way communications capabilities, but they could prove to be an attractive option for consumers.

According to the Carmel Group, by early this year, satellite providers such as DirecTV and EchoStar will have beaten cable providers to the punch by providing advanced interactive capabilities to its subscribers. By the end of 2000, the Carmel Group forecasts that satellite providers will have 5 million subscribers signed on for services, compared to 4 million for cable modems. By 2003 DBS operators will provide services to 9.3 million subscribers, compared to 7.8 million for cable modems.

Satellite vs. Cable Modem Subscribers, 2000-2003 (Millions)

Satellite Subscribers

2000	5.0
2003	9.3

Cable Modem Subscribers

2000	4.0
2003	7.8

Source: Carmel Group, 2000

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Editor's Note: In many respects, interactive television is following in the mighty footsteps of the internet. Many of the experiences of the online world may be applicable to ITV development, including interactive advertising. To better understand the online advertising marketplace, eMarketer has provided the following analysis, based upon recent marketplace research in its new eAdvertising Report.

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A. Introduction

The internet continues to grow rapidly but the internet “phenomenon” is growing even faster, as the range of activities moving to the web, the pace of technology evolution, and the exploding dollar value of online transactions create exponential effects. Fueling the growth of e-commerce is web advertising, with a spending increase of 116% in 1999 alone.

Beyond the raw numbers there are signs that the web advertising market is now approaching its “teen-age years”. Advertisers are crossing through the threshold engaging in experimentation and self-discovery (i.e., “What is my business doing on the web anyway?”). There are signs of maturity, too, as they integrate their advertising efforts across multiple media, develop more sophisticated e-commerce offers and enhance interactivity to leverage faster bandwidth. Finally, a level of responsibility is emerging, evident in the concerns with privacy and protecting consumer information.

Outside forces are also at work with the emergence and proliferation of wireless internet connectivity, the “always on” experience that is afforded by xDSL and cable modems, the popularity of user-to-user recommendations and the movement of traditional merchants into cyberspace where they are developing clicks-&-mortar e-commerce initiatives.

The merger of American Online with Time Warner is symbolic of the migration of internet advertising and e-commerce into the mainstream. This will generate a greater number and variety of advertising opportunities.

“We anticipated a market catalyst. Who could have expected it to come so early in the new millennium or for it to be such an extraordinary deal, as is the AOL Time Warner deal? It will trigger more deals and will speed up the development of interactive and digital TV. More importantly, it will accelerate the shift of marketing budgets from direct marketing and sales promotion to brand advertising. Media companies like AOL Time Warner and media specialists that adapt most rapidly to this new interactive, integrated world will be the big market winners.”
— Jack Myers, The Myers Group

“AOL’s proposed merger with Time Warner probably signals a number of things, such as a much broader array of content and commerce companies out there on the web, and the importance of the web as a distribution platform.”
— Tim Koogle, CEO, Yahoo

Rapid growth of vertical market sites - in both the business to business and business to consumer markets - has multiplied opportunities for advertising with "built-in" targeting. These vertical sites, as well as challengers from other quarters are threatening general portals.

At the same time, the controversy over DoubleClick's use of information gathered from web surfers has put some critical issues on the front burner — and consumers will largely dictate the outcome.

One thing remains constant: e-advertising holds out the promise of becoming the ultimate, targeted communications vehicle. However, realizing this potential continues to be a struggle. The development of online measurement tools continues to be a challenge, as is the slow evolution of optimal models, techniques and strategies for marketing on the web. In response, new approaches such as e-mail, personalization, affiliate marketing and web-based promotions continue to grow and evolve.

"There are three primary trends affecting media and advertising: interactivity, integrated marketing and return on investment. Individually, they represent a radical alteration of the industry. Together, they make everything we know outdated and irrelevant. Those who ignore these trends will be doomed to exist in a commoditized media world of eroding audiences and shrinking margins." — Jack Myers, *The Myers Group*

"The industry is maturing to the point where we are not going to see quantum leaps."

— John Nardone, *President, Modem Media, Poppe Tyson*

Like a good Darwinian ecosystem, new variations, mutations and developments are emerging in the online ad industry. While it is not possible to say the industry has reached maturity, it is certainly grappling with puberty. The industry is working with incredible energy to come up with a panorama of responses to objectives, issues and problems, but it still does not understand itself or its environment very well. Just like a teenager, it needs to find itself. The major barriers to online ad growth have not changed in the last year, but the list continues to grow. The newest addition: the controversy over the use of user information for personalization and targeting.

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Barrier

1. Not all target audiences are wired (at least not to the same degree)
2. The online audience is highly fragmented
3. Branding is relatively weak on the web
4. Bandwidth problems limit creative options
5. Internet users tend to be goal-directed, so anything that gets in their way, including ads, is often perceived as an intrusion or a bother
6. Advertisers have not cracked the problem of integrating online and offline advertising
7. Personalization technology raises issues about privacy and the use of personal information

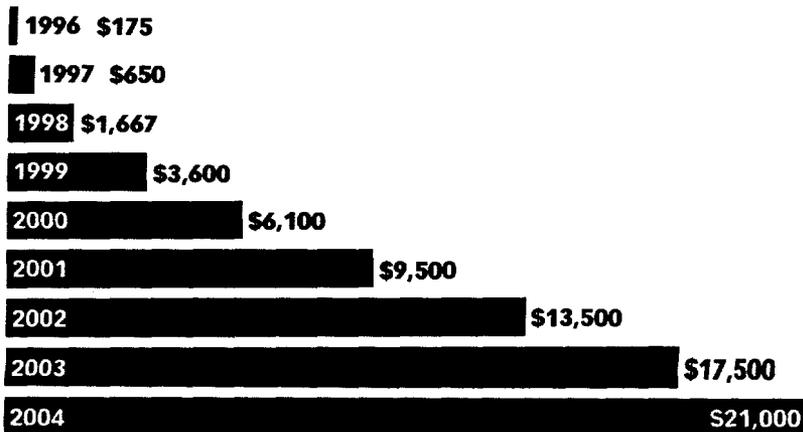
Development

- The internet continues to expand, attracting new users and approaching a "mass media" make-up
- Vertical sites are creating markets of web surfers with common interests
- A lot of money is being spent to understand and improve web branding
- DSL, cable and convergent technologies are progressing, though more slowly than originally projected
- Internet marketers are getting more savvy about how they communicate with online consumers (e.g., relationship marketing); and users are becoming increasingly interested in using the web for entertainment
- Advertisers are aware of the need for integration, and a few are already doing it
- Consumers, government authorities, marketers and other interested parties are pursuing discussions that will lead to eventual resolution

B. Dollar/Volume Projections

US companies spent \$3.6 billion on web advertising in 1999, and spending will increase to \$21 billion by 2004.

US Online Advertising Spending, 1996-2004 (Millions)



Source: eMarketer, 2000

Web advertising grew at 116% in 1999. While the rate of growth will slow over the next several years, it will still be 69% in 2000 and 56% in 2001. By 2004, the growth rate will shrink to 20%.

Growth Rates for US Online Advertising Spending		
Year	Millions	Growth vs. Previous Year
1996	\$175	
1997	\$650	271%
1998	\$1,667	156%
1999	\$3,600	116%
2000	\$6,100	69%
2001	\$9,500	56%
2002	\$13,500	42%
2003	\$17,500	30%
2004	\$21,000	20%
Avg. Annual Rate		95%

Source: eMarketer, 2000

The year-to-year increases seen in 1997 and 1998 are not sustainable. Inevitably, as the base gets bigger, the rate of growth will slow. The rate of growth in online advertising will also be affected by the following trends:

- Advertisers and their agencies will continue to tinker with critical issues such as measurement, standards and ROI evaluation
- Web advertising will be embraced by large consumer marketing companies and attain a more strategic position within corporate marketing budgets
- The industry will stabilize and mature

In the race to build awareness, establish online brands and drive site traffic, online marketers will continue to divert significant chunks of their "internet" marketing budgets to corporate website development and offline media. For most online marketers, their websites, and the consumer experience of interacting with them - not banner ads - will act as the primary branding medium, and possibly the primary response mechanism, for products and services marketed online.

Forrester Research has projected that while online advertising spending will grow to reach \$12.6 billion by 2002, spending on corporate website development could easily top \$18 billion in the same year

The following chart summarizes online ad spending projections from selected research firms for the years 1997 - 2005.

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Comparative Estimates of US Web Advertising Spending Projected Through Year 2004, (Millions)

Source	1997	1998	1999	2000	2001	2002	2003	2004
Coen/McCann Erickson	\$600	\$1,050	-	-	-	-	-	-
MarketAdvisor May 99	-	\$1,500	-	-	-	-	\$9,333	-
Aberdeen Group	na	-	-	\$5,100	-	-	-	-
Veronis, Suhler & Assoc.	\$906	\$1,900	\$3,300	\$4,500	\$5,700	\$6,900	\$8,200	-
InterMedia/CMR	\$545	\$1,034	\$1,910	-	-	-	-	-
Simba	\$597	\$2,100	\$5,500	\$6,500	\$7,100	-	-	-
Forrester Research	\$550	\$1,300	\$2,800	\$5,400	\$8,700	\$12,600	\$17,200	\$22,200
IDC	\$550	\$1,200	\$2,000	\$3,300	-	-	-	-
Giga Info. Group	-	\$1,140	\$2,340	\$3,950	\$5,770	\$8,000	-	-
Yankee Group	\$800	\$1,500	\$2,400	-	-	-	-	-
Myers Group	-	\$2,000	\$2,400	\$4,320	\$6,480	\$10,368	\$16,589	\$23,224
Lazard Freres	-	-	\$3,453	\$5,493	\$8,028	\$11,057	\$15,480	-
Jupiter Communications	\$940	\$2,100	\$3,500	\$5,000	\$6,700	\$8,800	\$1,500	-
eMarketer	\$650	\$1,667	\$3,600	\$6,100	\$9,500	\$13,500	\$17,500	\$21,000
Internet Stock Report	-	\$1,200	\$3,600	\$8,100	\$11,300	\$15,900	-	-
IAB (1)	\$906	\$1,920	\$4,621	\$7,740	\$12,487	\$18,350	\$25,394	-
Meckler-Media	-	\$1,200	\$4,400	\$11,200	\$16,300	\$22,900	-	-
ActivMedia	\$400	\$1,700	\$4,700	\$11,200	\$23,500	\$43,300	-	-

(1) Reflects eMarketer's statistical extrapolation of historical data reported by the IAB from 1st quarter 1996 through 3rd quarter 1999 (all predictions are within 95% confidence level). Sources: eMarketer, 1999, 2000; various, as noted

Why Are the Research Numbers So Different?

The wide discrepancies found in market data create confusion and frustration among web advertisers, advertising agencies, content sites and other industry watchers.

The disparity is largely due to the fact that there is a considerable amount of guesswork and interpretation involved in measuring anything to do with the internet. And internet advertising is no different.

"Ad measurement on the internet is a mess."

—Forrester Research, 1999

Beyond the obvious guesswork involved in the process of forecasting, three factors explain the differences seen in the published figures: different definitions, different methodologies and hidden biases.

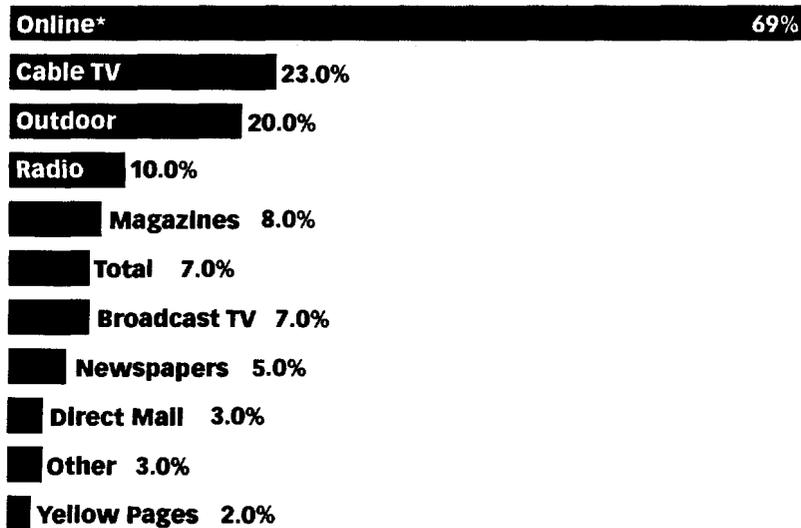
C. Comparing Web Advertising to Traditional Media Spending

Rates of Growth

Internet growth rates, because they start from a zero base, are astronomical at first, but inevitably they slow as the base grows. The chart below contrasts spending growth rates on the internet versus traditional media during the last few years. The internet grew at a faster rate than any other advertising media in 1998.

eMarketer expects growth in web advertising to be 69% in the year 2000.

Growth in Advertising Spending, by Medium (2000 vs. 1999)

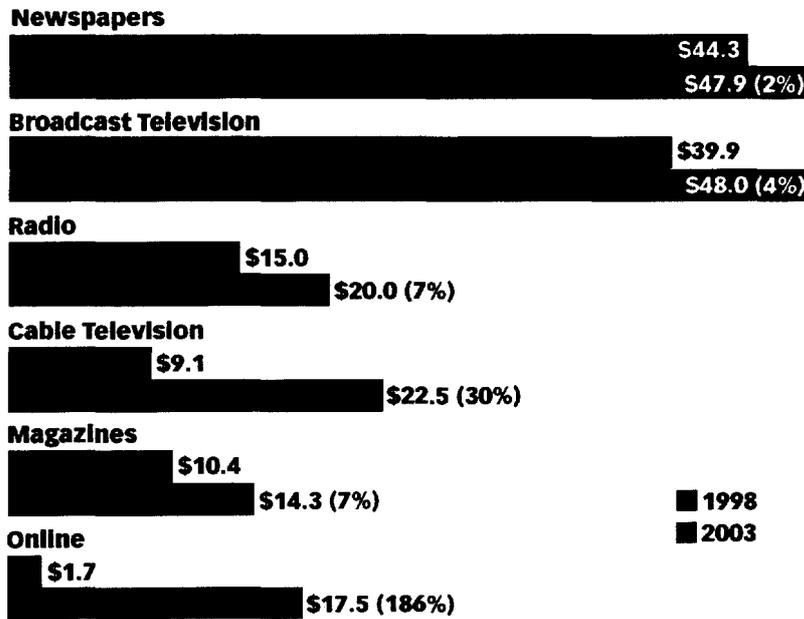


Source: Myers Group, 1999; *eMarketer, 2000

Over the 1997-2003 period, internet advertising will grow at an average annual rate of 186%. By contrast, the fastest growing traditional media will be cable TV, growing at an annual rate of 30%.

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1998 - 2003 Advertising Spending, by Media Type, In Billions (Avg. Annual Change)



Sources: Myers Group; 1999, eMarketer 2000

Jupiter Communications also expects the growth of online and, to a lesser extent, cable TV to outpace other advertising vehicles between 1998 and 2002.

D. The Effect of the Web On Television

The effect of web surfing on TV viewing habits has been analyzed, but without definitive conclusions. Current Nielsen Media Research studies (adjusted for a “pre-existing” tendency of web users to watch less TV), peg the net’s deleterious effect on television to be in the 10 - 15% range. This is the latest of many studies attempting to document the web’s impact on TV watching. In 1998 Nielsen found that internet-connected households spent about 15% less (roughly 8 hours) averaged over the entire week.

A later Nielsen study found that households that are now online (i.e., “early adopters”) have always watched less television. It attributed 80% of the difference in TV viewing time to persistently lower interest in TV that began long before the internet. The remaining 20% was, in fact, time taken away from TV by the internet.

eMarketer’s most recent data (based on our definition of “active” web users) indicates that time spent on the internet is now approaching 25% of TV. Although the internet has many more available channels (or sites), the number of channels/sites actually used is not too different from TV. Note that our figure for average internet usage of 6.7 hours per week is based on the universe of web users, not total adults in the US population.

Comparing Household Television Usage vs. Internet Usage

	TV	Internet
Households Connected, in Millions	99	34
Avg. Time Spent per Adult per Week	28 hours	6.7 hours
Avg. Channels/Sites Received	57	Millions
Avg. Channels/Sites Used	13	14

Sources: Television data from Nielsen Media Research, 1999; internet data from eMarketer, 2000 (reflects eMarketer's definition of "active web users")

Nielsen Media Research also looks at television versus internet usage, although their figure for time spent online is averaged across all adults, not just internet users.

Media Habits in the Home, According to Nielsen

	TV	Internet
Households connected	99 million	38 million
Avg. time spent per adult per week	28 hours	1 hour
Avg. Channel/sites received	57	millions
Avg. Channel/sites used	13	12

Source: Nielsen Media Research, 1999; eMarketer, 2000 (reflects eMarketer's definition of "active web users.")

As more users from the mainstream of society have become web surfers, the average effect on TV watching has dropped from 15% to 10%, though the data has fluctuated significantly.

The Net's Effect on Television Viewership

Early 1998	15%
Late 1998	13%
July 1999	13%
September 1999	10%

Source: Nielson Media Research, 1999

A 1998 audit of media usage patterns by International Demographics, Inc., found that heavy users of the internet are also heavy users of television, and that light net users generally are also light viewers of TV:

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Heavy Net Users Are Heavy TV Users

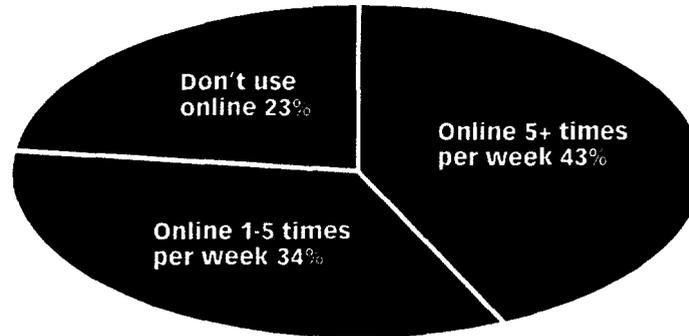
Hours spent on TV per day



Source: International Demographics, Inc., 1998

Similar conclusions came from the Myers Group, which found that of TV users who own computers, the largest group — 43% — are the heaviest web surfers, and go online five or more times per week.

Online Use by TV Users Who Own Home Computers, 1999



Source: Myers Group, 2000

Despite worries about the internet, TV use continued to rise in 1999. The prime-time HUT (households using TV) rose 2% in 1999 and total prime-time viewing audiences jumped 3%, according to a Turner Entertainment Research analysis of full-year data from Nielsen Media Research.

Although the major broadcast networks continued to experience prime time ratings erosion, the rate of erosion slowed during 1999. Basic cable continued to register strong gains, maintaining a double-digit household delivery growth rate of 10%.

Comparative Household Delivery of TV, 1998 & 1999 (Millions)

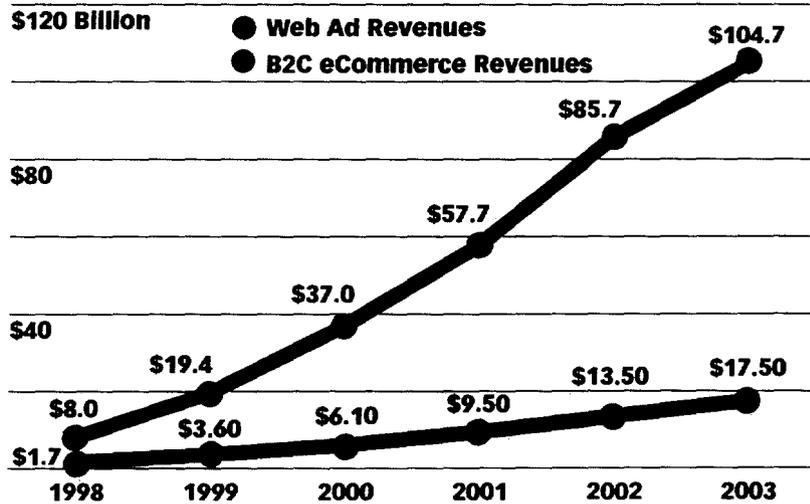
	1998	1999	Change
Broadcast Networks	31.2	31.4	+1%
All Cable	26.3	29.0	+10%
PBS	1.9	1.9	-
Independents	6.6	7.0	+6%
HUT	56.9	58.2	+2%
Total Viewing Audience	65.3	67.3	+3%

Source: Nielsen Media Research, 2000

E. The Promise of eCommerce

For a final perspective on web advertising, by comparing web advertising revenues with e-commerce sales, including both business-to-business and business-to-consumer, it is clear that e-commerce will continue to be the mother-lode of net-based revenues.

Comparison of Web Advertising vs. Consumer eCommerce Revenues, 1998 - 2003 (Billions)



Source: eMarketer, 2000

For more data and analysis on e-commerce, see eMarketer's eBusiness and eRetail reports, or visit the eMarketer website at www.emarketer.com

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F. How Advertising Appears on the Web

By Ad Format

There are four general types of online ad space formats used by web advertisers:

1. **Banners** - an advertising unit that typically appears at the top of a web page, but can also appear on the bottom or sides of a page
2. **Sponsorships** - also referred to as side frames, these are advertisements on a frame web page that are positioned along the side of the requested content (ideally, the sponsorship message is related to the adjoining content)
3. **Interstitials** -full screen ads that appear on web browsers while a new page is loading
4. **eMail** - either text or HTML-based delivery of e-mail messages containing commercial messages
5. **“Rich Media”** - uses the integration of animation, sound, interactivity and even e-commerce, within the space typically filled by a GIF banner ad

There are many variations within each format, as well as a lack of agreement on uniform definitions, which makes measurement and comparisons across different research firms difficult.

The banner ad (typically “468 x 60”) is still the standard advertising form on the web, accounting for half (50%) of all online ad dollars placed in 1999. Sponsorships were the second most popular form with 38%, and interstitials made up 5%. In 1999, e-mail emerged as a significant category, capturing a 3% share.

By the end of 2003, banners will decline to 41% of web ad sales, with strategic sponsorships taking 30%. eMail will grow to 11%, interstitials will have 8%, and new formats will take 10%.

Distribution of Web Advertising Dollars, by Ad Format, for 1998-2003

	1998	1999	2000	2001	2002	2003
Banners	52%	50%	47%	43%	42%	41%
Sponsorships	40%	38%	37%	35%	32%	30%
eMail	1%	3%	5%	8%	10%	11%
Interstitials	3%	5%	6%	6%	7%	8%
Other/New	4%	4%	5%	8%	9%	10%

Source: eMarketer, 2000

Click-Through Rates

The use of banner ads to increase brand recognition, drive site traffic and generate sales leads is hampered by the fact that most ad banners don't get clicked on. Meanwhile, many analysts argue that click-through is a meaningless and inappropriate metric for web advertising.

One reason that click-through rates for banner ads are so low is that over half of all net users - 52% - never click on them. Researchers disagree on the exact number, but the range among researchers is between 50 - 60%.

Comparative Estimates: % of Internet Users Who Never Click on Banner Ads, 1999

eMarketer	52%
Market Facts	49%
Forrester Research	50%+
NetSmartAmerica.com	63%

Sources: eMarketer, 2000; various, as noted

Why are CTRs Falling?

- Too many ads chasing too few viewers
- The novelty and thrill are gone
- Complexity of the page
- Surfers are evolving into Searchers
- Users are more discriminating

Click-throughs are also falling because banner ads interrupt the web user who is typically engaged in a search for specific information.

Of course, the likelihood of a consumer clicking on a banner depends significantly on what they're doing when they see it. Banners that are targeted and well-matched to users activities and interests do much better at eliciting a response.

New Users' Likelihood of Clicking On Ad Banners, by Activity

	Unlikely	Likely	Extremely Likely	Likely/Ext. Likely
Reading News	55%	39%	6%	45%
Researching Products	35%	59%	9%	68%
Shopping for Products	29%	65%	6%	71%
Using a Search Engine	13%	81%	6%	87%

Source: Forrester Research, 1999

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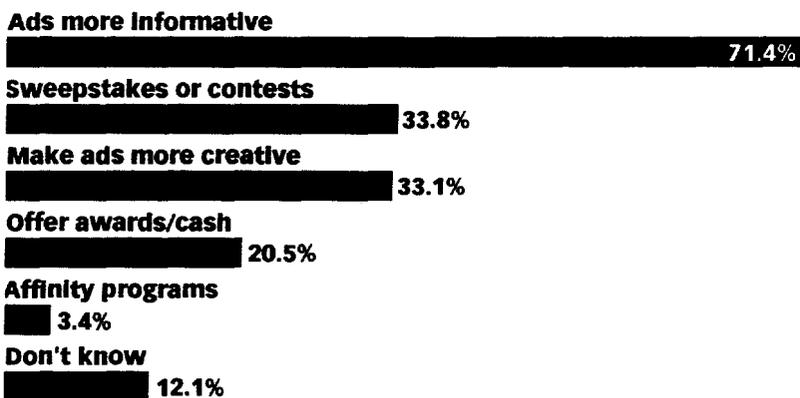
NetSmartAmerica.com found that integrating advertising with editorial content (e.g., via content sponsorships on portals) makes the advertising almost twice as effective as stand-alone banners. In their study, 47% of web surfers visited new websites as a result of content on a portal versus 26% from a banner ad. This would argue that strategic sponsorships can be effective at driving site traffic.

“The key to success is strategic placement. Make sure that your product has an affinity with the site and the content you’re sponsoring. And web surfers are looking for helpful content...they’re not going to sit through an infomercial. The content should have real perceived value.” — Bernadette Tracy, President, NetSmartAmerica.com

Can Click-Through Rates Be Increased?

Surveys have shown that higher click-throughs can be achieved by adding more information, sweepstakes or contests, or making ads more creative. In an NFO Interactive study, for example, over 71% of respondents emphasized the importance of information, over twice as many as favored any other technique.

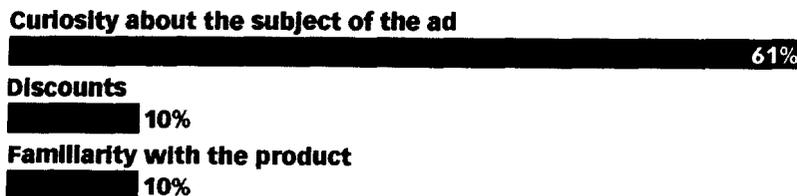
What Would Make Internet Consumers Click?



Source: NFO Interactive for Jupiter Communications, 1999

In another survey, PC Data identified curiosity about the subject of the ad as the primary motivator of banner clicks. Clearly, relevance is a key factor here.

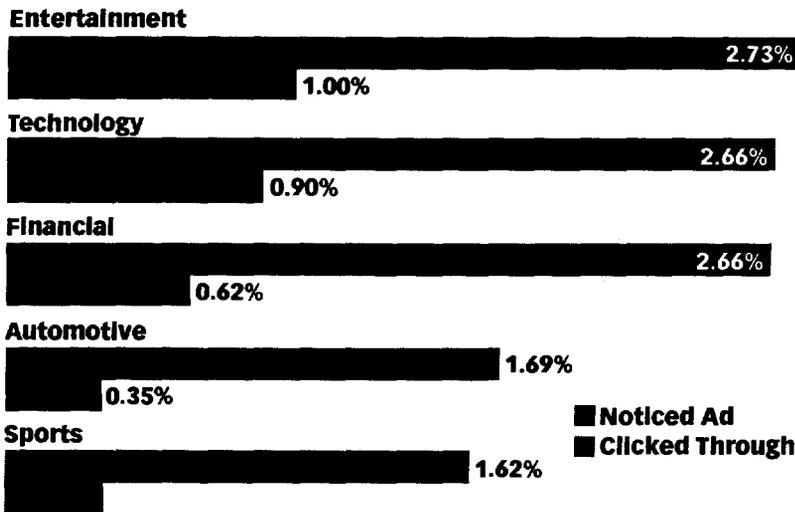
What Makes Visitors Click? (on Banners)



Source: PC Data, 1999

Web users are apparently more likely to notice and click on ads promoting entertainment, technology or financial-related products and services. NPD surveyed 2,893 online users and found clear variations in response depending on subject matter.

Effect of Ad Content Type on Click-Through Rates



Source: NPD Online, May 1999

Continuing Research into the Subtleties of Click-Through Rates

A prevalent theory asserted that after three ad exposures, clicks fall off dramatically, but an AdKnowledge study concluded that no blanket statement can be made about frequency and response. Other variables, such as content and context, also play a role. Of four cases, responses declined in two, but the other two sites exhibited different patterns. For one specialty content site, the click-through rate remained steady, while one portal's click-through rate rose dramatically on the fifth ad exposure.

% of Web Users Clicking at Nth Ad Exposure

Site	1st	2nd	3rd	4th	5th
Portal A	2.14%	1.41%	1.12%	0.93%	0.83%
Specialty Content Site A	2.84%	3.14%	3.01%	3.46%	3.08%
Specialty Content Site B	4.07%	2.60%	1.96%	1.57%	1.46%
Portal B	3.16%	2.05%	1.26%	1.07%	2.14%

Source: AdKnowledge, 1999

Of course, metrics of success depend heavily on the objectives of the advertising campaign. According to the Myers Group, targeting and brand-building are at the top of marketers' lists.

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What Factors Do You Consider in Deciding to Use Online Advertising?



Source: Myers Group, 1999

Measuring ROI

Currently, there are four common methods to measure return on investment on the web.

Online Advertising ROI: Four Common Methods

ROI Type	Symbol	Definition
1. Advertising-to-sales ratio	A/S	Total cost of web advertising divided by online sales during the same period.
2. Click-through rate	CTR	Calculated by dividing the number of click-throughs by the number of ad impressions served.
3. Cost-per-lead	CPL	Advertiser pays based on how many consumers participate in a contest or fill out a literature request form.
4. Cost-per-sale	CPS	Advertiser pays based on how many consumers actually buy something as a direct result of the banner ad/promotion.

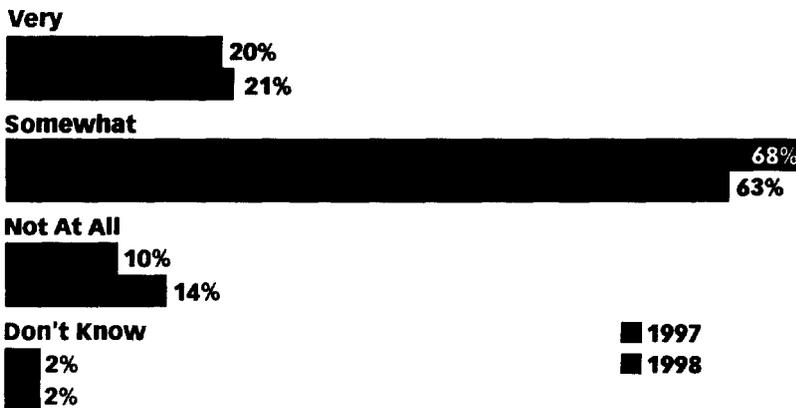
Source: eMarketer, 1999

Jupiter Communications has suggested another series of metrics: incremental revenue, incremental customers/users, revenue, total customers/users and profitability. Their data shows that pure-play internet companies and traditional businesses, or "incumbents," prioritize the use of metrics differently. Note that traditional firms value profitability higher than do online-only businesses.

G. Attitudes Toward Online Advertising

According to Advertising Age's sixth annual Interactive Media study conducted in October 1998 (via Market Facts TeleNation), more than one-in-five (21%) internet users thought online advertising was "very acceptable." Another 63% thought it was "somewhat acceptable" (which reflects the fact that most people tend to view web banners as tolerable background noise). However, the percentage of users who feel that web advertising is "not at all acceptable" edged upwards to 14% from 10% the previous year.

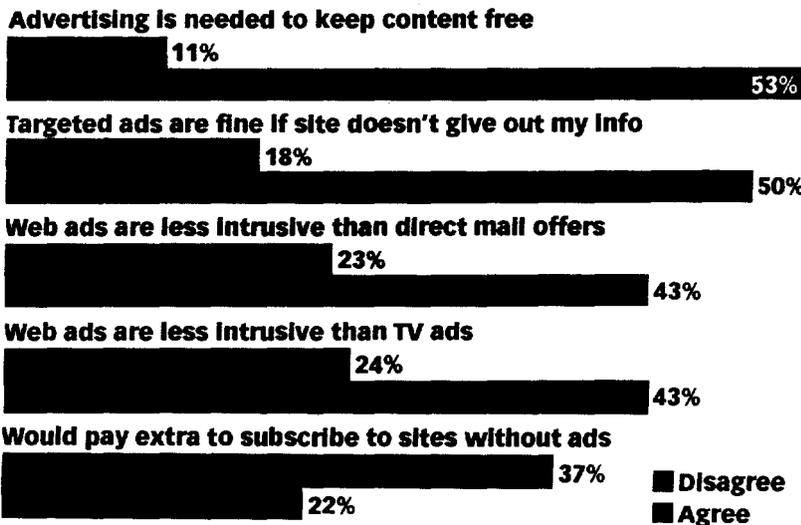
How Acceptable Is Online Advertising?



Source: Market Facts TeleNation, 1998

A 1998 INTECO survey showed that internet users apparently understand the role of online ads in supporting free content, yet they remain wary of privacy/data issues.

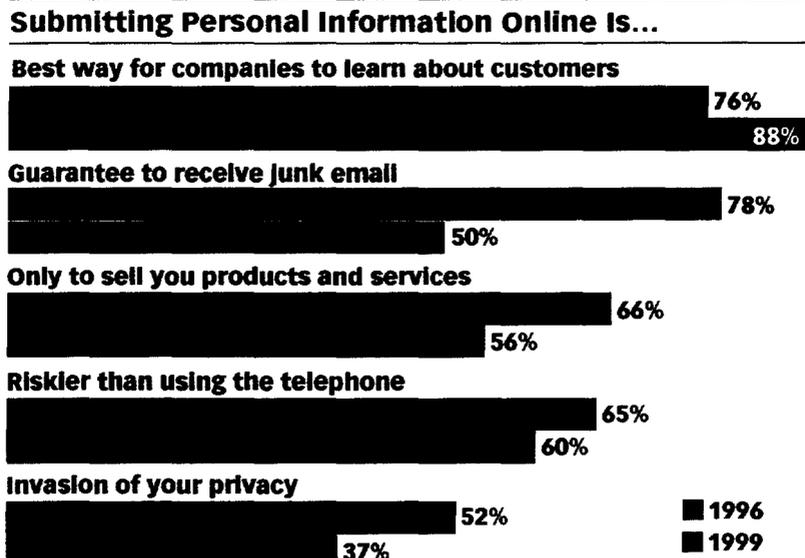
Opinions of Web Advertising



Source: INTECO, 1998

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Similarly, a 1999 survey by Cyber Dialogue found that information exchanged with websites is the best way for companies to learn about their customers, if the information collected translates to truly personalized content on the site. Compared to 1996, web surfers are less likely to feel registration is simply a guarantee to receive junk email and marketing solicitations. However, these figures are offset by security concerns: 60% still feel that submitting information online is riskier than by telephone, and over 37% feel it is a direct invasion of privacy.

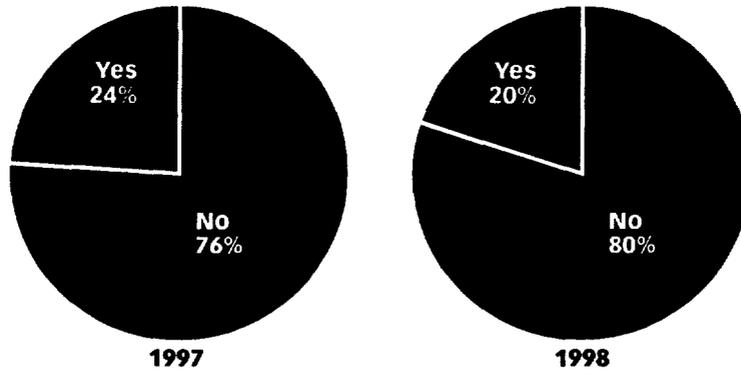


Source: Cyber Dialogue, 1999

In contrast, a Roper-Starch survey reported that almost three-fourths (74%) of Americans feel that TV commercials are a fair price to pay for being able to watch the medium for free.

A growing number of web marketers are experimenting with the concept of incentivizing consumers to view banner ads. A 1998 study from Market Facts, however, indicated that only one-fifth of the online population would appear to be candidates for this marketing ploy. In addition, using bribery to induce ad viewership is likely to reflect poorly on brand image.

Would You Agree to View Ads in Exchange for Prizes or Discounts?



Source: Market Facts TeleNation, 1998

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A. Introduction

There's a general impression in American media circles that interactive television in Europe is far ahead of the United States. In many respects that's correct, but in others it is a case of the grass looking greener on the other side of the pond.

When looking at forecasts for ITV abroad, much depends on definitions of interactive television. Some of the forecasts appear to include digital television capacity used for internet access to the PC, which does not fit the definition of ITV being used by The Myers Group and eMarketer in this report. It's also difficult to clearly assess ITV's future internationally because in many countries, cable and satellite penetration, as well as PC penetration, is expected to grow significantly but still lag well below levels in the United States.

The following provides a look of the international ITV market by Myers using publicly available data and analysis courtesy of eMarketer, from its March 2000 eGlobal Report.

B. Europe

Interactive television services are making headway in Europe, where there is said to be more than 8 million homes with access to ITV. During Myers' ITV Forum in February, Jurgen Lembke, president of agency.com, Copenhagen, predicted that "in 2003 there will be more than forty million people in Europe" who have access to interactive television.

European Interactive Digital TV Penetration in Selected European Countries, 1999-2003 (Percent of Homes)

	1999	2000	2001	2002	2003
Germany	1%	2%	4%	5%	6%
France	10%	12%	13%	14%	15%
Italy	2%	3%	4%	5%	5%
Spain	4%	6%	7%	8%	8%
UK	3%	13%	21%	29%	34%
Total Europe	2%	4%	7%	9%	12%

Source: Morgan Stanley Dean Witter (MSDW), 1999

Much of the recent focus on European ITV has been on the United Kingdom, where British Sky Broadcasting has brought interactive television to its nearly 2 million subscribers through its Open service. (Open was formerly called British Interactive Broadcasting. Open is a different company than OpenTV, and to make matters more confusing it uses the OpenTV operating system).

While it does not offer internet services, Open gives users e-mail, banking and shopping. Open's pre-Christmas sales were estimated at over 1 million pounds a week. In order to roll out digital, Sky gave away digital set-tops, a move that put them in the red. But by the fall of 1999, analysts were estimating Sky Digital was adding 50,000 new subscribers per week. Sky's BSkyB interactive Sports launched in the summer of 1999, allowing viewers to choose camera angles, replays and statistics. There are plans to make SkyNews interactive. Open boasts that its e-commerce Woolworth's is the third largest selling shop for entertainment goods out of 800 Woolworth's U.K. stores.

Like Sky, others in the U.K. are stressing interactive television capability over internet access, even when providing a mix of the two. Cable & Wireless Communications (being acquired by another UK cable operator, NTL) is using Liberate's middleware to provide enhanced TV mixed with internet access. Using either a keyboard or remote, users can send e-mails or browse through classified car and real estate ads. Telewest, another leading cable operator also using Liberate, provides Active Digital, offering shopping, financial services, game show participation and other services. ITV services also are being introduced over-the-air via a digital terrestrial television service, On Digital, which uses UHF frequencies and a box sold at retail.

London's Channel 4 is set to begin operating E4, its multi-tiered interactive entertainment platform in November 2000. E4 has plans to build up a profile of each customer so it can target programming and advertising. When E4 develops into broadband on the internet, it has hopes of issuing viewers a smart card that would work on a pay-per-view model.

Interactive ads are popping up in various European platforms. Procter & Gamble is set to try an interactive ad for Pantene over a digital cable platform in Manchester. British Airways has an interactive campaign on Sky that allows viewers to click for more information on travel services, locations and hotels. French satellite broadcaster TPS has been running interactive advertisements for three years and claims that a phenomenal 80% of viewers who are aware of an ad's interactive option actually use it.

Procter & Gamble has launched interactive ads on the French digital platform, Television Par Satellite, which has 800,000 plus subscribers. Also in France, the most developed interactive TV advertising market, advertisers such as Nissan, Buitoni and others are running interactive advertising on Canal Satellite Numerique, which claims more than 2.2 million customers.

More than a quarter of European households now have cable TV, a figure that is forecast to rise to more than 30% by 2001. This is still less than half the 67% of households in the US connected to cable, but represents substantial growth nonetheless. While cable penetration is high in countries like Belgium and the Netherlands, much of the infrastructure reportedly needs to be upgraded to provide broadband access.

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European Cable TV Penetration in Selected European Countries, 1997-2001 (Percent of Homes)

	1997	1998	1999	2000	2001
Belgium	94.0%	94.0%	94.0%	94.0%	94.0%
Germany	56.0	57.0	58.0	59.0	60.0
France	11.0	12.0	14.0	16.0	18.0
Netherlands	94.0	95.0	96.0	96.0	96.0
Norway	40.0	42.0	43.0	44.0	44.0
Spain	0.0	2.0	3.0	5.0	8.0
Sweden	40.0	40.0	41.0	41.0	41.0
UK	10.0	12.0	15.0	17.0	18.0
Total Europe	26.0	28.0	29.0	30.0	31.0

Source: Morgan Stanley Dean Witter (MSDW), 1999

In terms of subscriber numbers, it's estimated there will be 65.8 million cable and satellite homes by 2001, representing 43% of the 386 million individuals in Western Europe.

Cable & Satellite TV Subscriptions in Europe, 1998-2003 (Millions)



Source: The Strategis Group, 1999

C. Asia

According to analysis by eMarketer, several major Asian countries are moving swiftly to promote broadband cable as a means to provide internet access. While satellite television paved the way for multichannel service initially, cable is now booming in such countries as India, with a cable base of 37 million, and China, with 80 million.

According to a study done by Baskerville Communications, approximately 21% of all households with televisions in Asia are cable subscribers. Taiwan has the greatest percentage of subscribers at 74% of all television households.

Households in Asia with Cable, 1998 (Millions)

	Television HHs	Cable Subscribers	Percentage
Taiwan	5.89	4.40	74.7%
India	59.55	18.25	30.6%
New Zealand	1.25	0.35	28.0%
Hong Kong	1.85	0.48	26.0%
China	309.80	68.80	22.2%
Singapore	0.83	0.18	21.6%
Japan	42.59	6.34	14.9%
Australia	6.22	0.90	14.5%
Philippines	7.95	0.68	8.6%
South Korea	14.13	0.75	5.3%
Malaysia	3.73	0.19	5.1%
Thailand	13.69	0.28	2.0%
Indonesia	28.09	0.04	0.1%
Total	495.57	101.63	20.5%

Source: Baskerville Communications Corp

D. Latin America

Cable and satellite TV has been growing in Latin America but penetration figures vary widely by country, from more than 58% in Argentina to only 8% in Brazil (as of 1998).

Based on an analysis by eMarketer, using U.S. Census Bureau and Morgan Stanley Dean Witter figures, the following are percentages of households with cable or satellite in select Latin American countries as of 1998:

% of Households w/Cable or Satellite TV, 1998

Argentina	58.85%
Colombia	25.97%
Chile	25.69%
Mexico	10.71%
Venezuela	10.05%
Brazil	8.16%

Source: eMarketer, 2000; US Census Bureau, 1999; MSDW, 1999

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Cable and Satellite TV Penetration, Total for Latin America, 1998

Population	507,503,285
# of Households (Avg. person/household=4.18)	121,412,269
# of Cable Subscribing Households	15,151,000
# of Satellite Subscribing Households	2,000,000
# of Cable or Satellite Subscribing Households	17,151,000
% of Households w/ Cable or Satellite	14.13%
# of People w/ Cable or Satellite	71,691,180
% of Population w/ Cable or Satellite	14.13%

Sources: U.S. Census Bureau 1999; eMarketer 2000; MSDW 1999

In much of Latin America, wireless technologies have made greater headway and are being looked upon as a means of enhanced communications and internet access.

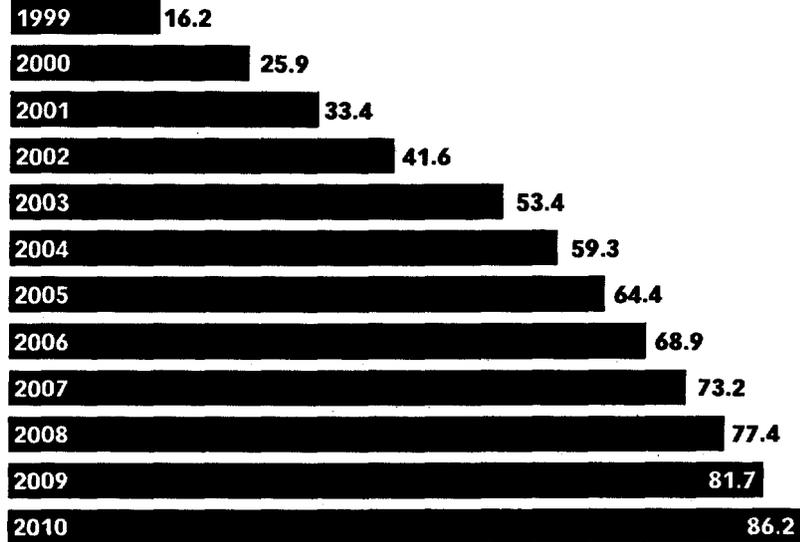
Number of Home PCs, Cable and Cellular Service in Latin America, 1999–2003 (Millions)

	1999	2000	2001	2002	2003
Home PCs ¹	5.0	6.1	7.2	8.6	9.8
Cable Subscribers	16.2	25.9	33.4	41.6	53.4
Cellular Subscribers	27.4	54.3	74.4	88.4	101.1

Source: 1) IDC, Strategy Corp., Solomon Smith Barney; all other data via Solomon Smith Barney.

Nonetheless, cable is expected to grow significantly this decade, adding to the prospects for internet and ITV services.

**Number of Cable TV Subscribers in Latin America,
1999–2010 (Millions)**



Source: Salomon Smith Barney, 1999

Summary & Conclusions

Though still in a nascent state, interactive television is demonstrating significant progress on a variety of fronts. Buoyed by developments in digital technology that have increased functionality and decreased costs, ITV services are poised to be distributed on a widespread, economically scalable level. As demonstrated by the results of Myers' Prospects for ITV Survey of high-level media executives, the industry expects that ITV will reach a critical mass of users and blossom into a multi-billion dollar business over the next 3-5 years. The Myers Group and others foresee a major upsurge in ITV subscription, advertising and e-commerce revenue by mid-decade. ITV has gained support across a broad spectrum of existing media companies while new entrants and investments continue to pour into the business. These players, soon to be joined by convergence heavy-weight AOL Time Warner, will drive ITV with resolute collective force. Perhaps more important, initial U.S. trials and service launches, as well as promising ITV results in Europe, have bolstered confidence that when ITV arrives, the consumer is there.

Despite this optimism, many of the hurdles that have long stymied ITV still must be overcome. On the technology front, there still is no singular platform or interface/application combination that is being deployed with enough ubiquity to guarantee any ITV service's financial success. Technical standards and incompatibility remain as issues, as the Myers survey respondents note. Efforts to resolve these issues through governmental bodies or industry consortiums have provided some remedies, but widespread industry acceptance is difficult to achieve. However, recent developments among major software and middleware providers, in terms of merger and acquisition activity and deals with distributors, indicate that the marketplace will provide adequate platform solutions. Coupled with the coming deployment of advanced digital set-top boxes and other devices, distributors will be able to provide a launching pad for rapid deployment of enhanced TV, video-on-demand or internet over TV, the latter of which will be joined by advances in online media streaming that will further broaden the current concept of ITV.

continues

While the technological foundation is being built, attention must turn to important issues surrounding content applications, interactive advertising and e-commerce (or its buzzword descendant, t-commerce). It remains to be seen what combination of interfaces and applications will truly make ITV a unique experience and achieve the goals of giving consumers choice, convenience and control. The advertising industry is taking keen interest in interactive advertising and t-commerce, yet it needs workable formats, conventions and business models. The section in this report by eMarketer, *The Interactive Advertising Experience*, shows how the online advertising business, though growing by leaps and bounds, is grappling with such issues as measurement disagreements, research discrepancies, declining click-through rates and uncertain consumer attitudes toward online advertising. These are the types of issues that the ITV business has barely begun to tackle.

This year will continue to be highlighted by further dealmaking, investments (depending on the fickleness of the stock market, of course), new entrants, technological advancements, media convergence and service deployments. All of these developments are building momentum toward a rapid rollout of ITV services and associated businesses in the years ahead. There are still barriers to overcome and issues to be sorted out, but ITV has successfully taken the necessary initial steps to achieve its long-held promise.

It is the hope of The Myers Group and eMarketer that this jointly published report will promote a better understanding of the ITV marketplace. No report can fully incorporate all of the developments, data and viewpoints in this rapidly changing environment. If you have additional information or opinions that you wish to add for future analyses, we invite you to contact us.

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About The Myers Group

The Myers Group, LLC, formed in 1997 by veteran industry economic consultant Jack Myers, is a leading publisher of market news, insights and intelligence for the global media industry. Based in New York, Myers provides primary research, market reports, consulting and relationship-building services for well-known companies in the cable, broadcasting, online, advertising and print media. Myers publishes The Myers Report daily newsletter, providing quick media industry news and recent research highlights, and regular Myers Mediaonomics reports, offering in-depth market analysis and aggregated data to help media executives make business investment decisions. Topics include marketing, advertising, branding, technology, financial forecasts and strategic development. Myers recently established the Forum for Interactive Television Development to advance the state of the ITV industry by providing a forum for proactive initiatives. For more information, contact Myers at 212-764-5566.

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New York-based eMarketer, recognized worldwide as the authority on business online, provides e-telligence for business. The company's comprehensive reports aggregate, filter, organize and analyze the statistics, news and information businesses need to succeed on the web.

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